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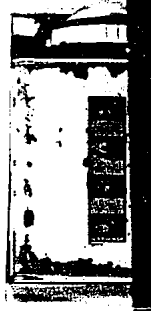

INFORMATION ON USSR HYDROLYSIS INDUSTRY

[Comment: This is an excerpt from Lesnaya Promyshlennost' SSSR (Forest Products Industry of the USSR), Series IV, No 38, by Engr Ye. I. Lopukhov, Znaniye, Moscow, 1955, 32 pages.]

The hydrolysis industry manufactures ethyl alcohol, protein yeast, crystalline sugars (glucose and xylose), furfural, and a number of other products out of inedible raw material of plant origin, principally wood pulp. This branch of the wood conversion industry was created in the USSR during the years of the prewar 5-year plans. Waste products of the wood-sawing, woodworking, and sulfite cellulose industries, and also firewood, are raw materials for the hydrolysis industry. The first Soviet sulfite alcohol plant was built in 1935 at the Syas'sk cellulose-paper plant. At the end of 1935 the first industrial hydrolysis plant operating on the waste materials from a wood-sawing plant began production in Leningrad. At present, many large hydrolysis plants are in operation in the USSR and a number of additional enterprises of this type are being constructed in various regions of this country.

The hydrolysis of wood pulp, by yielding valuable technical raw materials for a number of branches of industry (primarily technical alcohol), saves millions of puds [one pud equals approximately 36 pounds of potatoes and other food products. Every ton of absolutely dry wood pulp converted into alcohol frees 0.7 tons of grain or 1.6 tons of potatoes for other needs. An average of 60 liters of alcohol can be obtained from one cu m of conifer wood pulp. This method of alcohol production was found to be of advantage from the economic standpoint.

During the fourth year of the Fifth Five-Year Plan, the alcohol production capacity at hydrolysis plants was more than doubled.

Production by the hydrolysis method of molasses, which are a good fodder for cattle, is highly efficient. This is a nonperishable product which can be easily transported in tank cars.

Hydrolyzed molasses are considerably superior to hay, fodder beets, and potatoes both as to the carbohydrate content (potatoes, 18.8%; molasses, 50%) and to the fodder equivalent (potatoes, 29.5%; molasses 66%).

The workers of the USSR hydrolysis industry are striving toward the most complete utilization of all valuable substances found in the raw materials. In the technological processes that are applied, all kinds of sugar are used in turn. The nonfermentable sugars remaining after the fermentation of sugars to alcohol are used for the production of protein yeast.

The carbon dioxide which is given off during the fermentation of sugars and of sulfite liquor is used for the manufacture of dry ice.

The concentrates which are obtained after the evaporation of the spent wort are used in foundries, in the petroleum industry, and also in the production of vanillin. Lignin, which enters into the composition of wood pulp and is not dissolved during hydrolysis, is used for the preparation of heat-insulating boards and construction tiles, and is also employed in the production of plastics. Such valuable by-products of the processing of wood pulp as methyl alcohol and fusel oil are completely recovered.

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The hydrolysis industry is at present the largest consumer of waste materials of the wood-sawing and wood-working industries, and the only consumer of sawdust, which comprises about 40% of these waste materials. For this reason, hydrolysis plants of considerable capacity have been built and will be constructed in the future at many of new wood-sawing plants.

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